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DEPARTMENT OF EDUCATION

Proposed Priorities; Disability and Rehabilitation Research Projects and Centers Program

AGENCY: Office of Special Education and Rehabilitative Services, Department of Education.

ACTION: Notice.

Overview Information:

CFDA Number: 84.133E-1 and 84.133E-3

Proposed Priorities--National Institute on Disability and Rehabilitation Research (NIDRR)--Disability and Rehabilitation Research Projects and Centers Program--Rehabilitation Engineering Research Centers (RERCs).

SUMMARY: The Assistant Secretary for Special Education and Rehabilitative Services proposes two priorities for the Disability and Rehabilitation Research Projects and Centers Program administered by NIDRR. Specifically, this notice proposes two priorities for RERCs: Recreational Technologies and Exercise Physiology Benefiting Individuals with Disabilities (Proposed Priority (1) and Rehabilitation Robotics (Proposed Priority (2)). The Assistant Secretary may use one or more of these priorities for competitions in fiscal year (FY) 2012 and later years. We take this action to focus research attention on areas of national need. We

intend to use these priorities to improve rehabilitation services and outcomes for individuals with disabilities.

DATES: We must receive your comments on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Address all comments about this notice to Marlene Spencer, U.S. Department of Education, 400 Maryland Avenue, SW., room 5133, Potomac Center Plaza (PCP), Washington, DC 20202-2700.

If you prefer to send your comments by e-mail, use the following address: Marlene.Spencer@ed.gov. You must include the term "Proposed Priorities for RERCs" and the priority title in the subject line of your electronic message.

FOR FURTHER INFORMATION CONTACT: Marlene Spencer.

Telephone: (202) 245-7532 or by e-mail:
Marlene.Spencer@ed.gov.

If you use a telecommunications device for the deaf (TDD) or a text telephone (TTY), call the Federal Relay Service (FRS), toll free, at 1-800-877-8339.

SUPPLEMENTARY INFORMATION:

This notice of proposed priorities is in concert with NIDRR's currently approved Long-Range Plan (Plan). The Plan, which was published in the Federal Register on

February 15, 2006 (71 FR 8165), can be accessed on the Internet at the following site:

www.ed.gov/about/offices/list/ose/nidrr/policy.html.

Through the implementation of the Plan, NIDRR seeks to: (1) improve the quality and utility of disability and rehabilitation research; (2) foster an exchange of expertise, information, and training to facilitate the advancement of knowledge and understanding of the unique needs of traditionally underserved populations; (3) determine best strategies and programs to improve rehabilitation outcomes for underserved populations; (4) identify research gaps; (5) identify mechanisms of integrating research and practice; and (6) disseminate findings.

This notice proposes two priorities that NIDRR intends to use for RERC competitions in FY 2012 and possibly later years. However, nothing precludes NIDRR from publishing additional priorities, if needed. Furthermore, NIDRR is under no obligation to make awards for these priorities. The decision to make an award will be based on the quality of applications received and available funding.

Invitation to Comment: We invite you to submit comments regarding this notice. To ensure that your comments have maximum effect in developing the notice of final

priorities, we urge you to identify clearly the specific proposed priority that each comment addresses.

We invite you to assist us in complying with the specific requirements of Executive Order 12866 and its overall requirement of reducing regulatory burden that might result from these proposed priorities. Please let us know of any further ways we could reduce potential costs or increase potential benefits while preserving the effective and efficient administration of the program.

During and after the comment period, you may inspect all public comments about this notice in room 5140, 550 12th Street, SW., PCP, Washington, DC, between the hours of 8:30 a.m. and 4:00 p.m., Washington, DC time, Monday through Friday of each week except Federal holidays.

Assistance to Individuals with Disabilities in Reviewing the Rulemaking Record: On request we will provide an appropriate accommodation or auxiliary aid to an individual with a disability who needs assistance to review the comments or other documents in the public rulemaking record for this notice. If you want to schedule an appointment for this type of accommodation or auxiliary aid, please contact the person listed under FOR FURTHER INFORMATION CONTACT.

Purpose of Program: The purpose of the Disability and Rehabilitation Research Projects and Centers Program is to plan and conduct research, demonstration projects, training, and related activities, including international activities; to develop methods, procedures, and rehabilitation technology that maximize the full inclusion and integration into society, employment, independent living, family support, and economic and social self-sufficiency of individuals with disabilities, especially individuals with the most severe disabilities; and to improve the effectiveness of services authorized under the Rehabilitation Act of 1973, as amended (Rehabilitation Act).

Rehabilitation Engineering Research Centers Program (RERCs)

The purpose of NIDRR's RERCs, which are funded through the Disability and Rehabilitation Research Projects and Centers Program, is to improve the effectiveness of services authorized under the Rehabilitation Act. It does so by conducting advanced engineering research, developing and evaluating innovative technologies, facilitating service delivery system changes, stimulating the production and distribution of new technologies and equipment in the private sector, and providing training opportunities. RERCs seek to solve rehabilitation problems and remove

environmental barriers to improvements in employment, community living and participation, and health and function outcomes of individuals with disabilities.

The general requirements for RERCs are set out in subpart D of 34 part 350 (What Rehabilitation Engineering Research Centers Does the Secretary Assist?).

Additional information on the RERC program can be found at: www.ed.gov/rschstat/research/pubs/index.html.

Program Authority: 29 U.S.C. 762(g) and 764(b)(3).

Applicable Program Regulations: 34 CFR part 350.

PROPOSED PRIORITIES:

This notice contains two proposed priorities.

Proposed Priority 1--Recreational Technologies and Exercise Physiology Benefiting Individuals with Disabilities.

Background:

Individuals with disabilities engage in physical activity, or movement that enhances health, far less often than individuals without disabilities, despite the consistent evidence indicating the benefits of regular physical activity for their health and well-being (Institute of Medicine, 2007). Environmental barriers, such as inaccessible facilities, equipment, and recreational programs, continue to limit participation in physical and recreational activities among individuals with

disabilities. Another factor impeding more engagement in physical activity among this population is limited knowledge about safe and appropriate levels of exercise. New knowledge in this area could be used to guide clinicians, other practitioners, and individuals with disabilities as they make decisions about optimal levels of participation in physical and recreational activities.

While modifications to recreational facilities and equipment, such as the addition of swing-away seats to allow use from a wheelchair or the addition of braille instructions for the equipment, are becoming more common, these modifications are not universally available. Inaccessibility of recreational equipment and environments remains a primary barrier to participation in physical activities (Kailes, 2011). In addition to modifying existing facilities and equipment, there are novel recreational technologies that need to be tested for use by individuals with disabilities. For example, virtual reality (VR) and body movement tracking video-game technologies offer an emerging and highly promising method for promoting, monitoring, and supporting greater participation in physical activity by individuals with disabilities.

For those individuals with disabilities who do engage in physical activity, there is little evidence about the amount of physical activity and energy expenditure required to promote health and function and prevent secondary conditions (Rimmer, Chen, McCubbin, Drum, Peterson, 2010). The development of new methods and techniques or adaptation of existing technologies that can estimate the intensity and frequency of physical activity (e.g., pedometers, accelerometers, and data-logging technologies) could be an effective means of promoting health and function for specific disability populations (Hiremath & Ding, 2011).

For these reasons, NIDRR seeks to fund research and development activities that will facilitate equitable access to, and safe use of, recreational equipment, facilities, and recreational programs, and that will increase physical health and reduce secondary conditions associated with disability and sedentary lifestyle.

References:

Hiremath SV, Ding D. (2011). Regression equations for RT3 activity monitors to estimate energy expenditure in manual wheelchair users. Conference Proceedings IEEE Engineering in Medicine and Biology Society. Aug; 2011:7348-51.

Institute of Medicine. (2007). Adequacy of Evidence for Physical Activity Guidelines Development: Workshop summary. Washington, DC: The National Academies Press.

Kailes, J.I. (2011). Using a fitness center does not have to be an exercise in frustration: Tips for people with mobility and visual disabilities. Retrieved January 25, 2012, from http://www.ncpad.org/programming/fact_sheet.php?sheet=812&view=all&print=yes

Rimmer, J.H., Chen, M.D., McCubbin, J.A., Drum, C., Peterson, J. (2010). Exercise intervention research on persons with disabilities: what we know and where we need to go. American Journal of Physical Medicine & Rehabilitation. 89(3): 249-63.

Rimmer, J.H., Hsieh, K., Graham, B.C., Gerber, B.S., Gray-Stanley, J.A. (2010). Barrier removal in increasing physical activity levels in obese African American women with disabilities. Journal of Womens Health. 19(10): 1869-76.

Proposed Priority 2--Rehabilitation Robotics

Background:

Individuals working in the field of rehabilitation robotics develop robotic systems that assist persons who have a disability that affects object manipulation,

mobility, and cognitive functions, or that provide therapy for persons seeking to improve physical functions (Van der Loos & Reinkensmeyer, 2008). Advances in assistance and therapy robotics can be used to improve outcomes of individuals with disabilities in one or more major life domains identified in NIDRR's currently approved Long Range Plan, published in the Federal Register on February 15, 2006 (71 FR 8165): health and function, community living and participation, and employment.

Assistance robots generally fall into three categories: those that provide assistance with object manipulation, mobility, or cognition. Examples of assistance robots include manipulator arms, wheelchairs with semi-autonomous navigation assistance, and cognitive aids that, for example, respond to sound, light, and contact to facilitate social interaction with children with autism and elderly adults with dementia (Van der Loos & Reinkensmeyer, 2008). There are a number of challenges associated with the design and widespread use of assistance robots for individuals with disabilities. For example, assistance robots typically need to be personalized to meet the specific needs, circumstances, and functional abilities of the individuals with disabilities using them. This need for individualization places practical limits on the

design, marketing, and widespread distribution of these technological solutions. Another challenge is ensuring the safety of individuals who use assistance robots, while maintaining the assistance robots' autonomy and optimal utility to the user (Van der Loos & Reinkensmeyer, 2008).

Although current assistance robots show promise in providing individuals with disabilities greater independence and more choice in rehabilitation therapies, new advances in rehabilitation robotics are needed to optimize their value and utility. For example, robotic manipulator arms can be enhanced to increase the speed and strength of the arm, while monitoring and adjusting the strength of the end component of the robotic arm, known as the end effector or end of arm tool (EOAT). With this enhancement, the manipulated objects are not crushed by the EOAT. Also, electric powered wheelchairs could adopt technologies from mobile robots in order to provide more intuitive operation with less user vigilance and strain. This could include integrated sensors for natural obstacle detection and avoidance, docking or securing the wheelchair to a floor, and navigation assistance. In addition, there is a need for more research and development on robotic assistance aids for children and adults with cognitive impairments.

Therapy robots generally aid in rehabilitation therapies for both the upper and lower extremities of individuals with a neurological disability, such as a stroke or spinal cord injury. Therapy robots can provide therapy over long periods of time, make precise measurements of therapeutic physical interventions to a degree not easily matched in other types of therapies, and provide exercises that a physical therapist cannot (Emken & Reinkensmeyer, 2005; Patton, Phillips-Stoykov, Stojakovich, Mussa-Ivaldi, 2006).

Currently, therapy robots are found only in large medical and rehabilitation centers. There is a need to simplify, downsize, and develop home- and community-based robotic systems to allow safe, low-cost access to such therapy outside of large rehabilitation centers. Therapy robots can help extend the therapist's clinical capacity into the community clinic and the home while allowing greater access to rehabilitation services for individuals with disabilities. For example, therapy robots could be linked to telerehabilitation portals to allow therapists to work remotely with patients in home and community-clinic settings (McCue, Fairman, Pramuka, 2010).

The technology for robotics has made great advances in the last decade. Motors are now lighter and more powerful.

Sensors are better and less expensive and batteries are greatly improved. These factors should help to facilitate the continuing growth of rehabilitation robotics, especially for wearable or lighter-weight robots. Accordingly, NIDRR seeks to fund an RERC that evaluates the efficacy of rehabilitation robotics and researches and develops innovative technologies and techniques to improve the current state of the science and usability of rehabilitation robotics for individuals with disabilities.

References:

Emken, J. & Reinkensmeyer, D. (2005). Robot-enhanced motor learning: Accelerating internal model formation during locomotion by transient dynamic amplification, IEEE Transactions on Neural Systems and Rehabilitation Engineering, 99, 1-7.

McCue M, Fairman A, Pramuka M. (2010). Enhancing quality of life through telerehabilitation. Physical Medicine and Rehabilitation Clinics of North America, 21(1): 195-205.

Patton, J.L., Phillips-Stoykov, M.E., Stojakovich, M., Mussa-Ivaldi, F.A. (2006). Evaluation of robotic training forces that either enhance or reduce error in chronic hemiparetic stroke survivors. Experimental Brain Research, 168, 368-383.

Van der Loos, M. & Reinkensmeyer, D.J. (2008).
Rehabilitation and Health Care Robotics. In: Springer
Handbook of Robotics. Siciliano, Bruno; Khatib, Oussama
(Eds.)

Proposed Priorities:

The Assistant Secretary for Special Education and
Rehabilitative Services proposes the following priorities
for the establishment of (a) a Rehabilitation Engineering
Research Center (RERC) on Recreational Technologies and
Exercise Physiology Benefiting Individuals with
Disabilities; and (b) an RERC on Rehabilitation Robotics.
Within its designated priority research area, each RERC
will focus on innovative technological solutions, new
knowledge, and concepts that will improve the lives of
individuals with disabilities.

(a) RERC on Recreational Technologies and Exercise
Physiology Benefiting Individuals With Disabilities
(Proposed Priority 1).

Under this priority, the RERC must research, develop,
and evaluate innovative technologies and strategies that
will enhance recreational and physical activity
opportunities for individuals with disabilities. The RERC
must research, develop, or adapt technologies to capture,
monitor, and analyze energy expenditure levels in

individuals with disabilities as they perform different recreational and physical activities, so that clinicians, researchers and individuals with disabilities can better estimate the intensity and frequency of physical activity required to promote health and function within specific disability populations. In addition, the RERC must facilitate access to, and use of, recreational and physical activity equipment, facilities, and recreational programs, that improve physical health and reduce debilitating secondary conditions associated with disability and sedentary lifestyle through such means as collaboration and communication with relevant stakeholders, technical assistance, and technology transfer, in addition to research and the development and testing of innovations.

(b) RERC on Rehabilitation Robotics (Proposed Priority 2).

Under this priority, the RERC must research, develop, and evaluate innovative technologies and strategies for the safe use of, and expanded access to, rehabilitation robotics by individuals with disabilities. This RERC must engage in research and development activities in the areas of both assistance and therapy robots for use by individuals with disabilities. The RERC must generate new knowledge and products that can improve the usability and utility of

assistance robots so that they are more efficient and effective facilitators of independence and community participation. The RERC must also generate new knowledge and products that expand the use of therapy robots beyond large rehabilitation centers and into more community and home-based settings.

Requirements applicable to both proposed priorities:

Under each priority, the RERC must be designed to contribute to the following outcomes:

(1) Increased technical and scientific knowledge relevant to its designated priority research area. The RERC must contribute to this outcome by conducting high-quality, rigorous research and development projects.

(2) Increased innovation in technologies, products, environments, performance guidelines, and monitoring and assessment tools applicable to its designated priority research area. The RERC must contribute to this outcome through the development and testing of these innovations.

(3) Improved research capacity in its designated priority research area. The RERC must contribute to this outcome by collaborating with the relevant industry, professional associations, institutions of higher education, health care providers, or educators, as appropriate.

(4) Improved usability and accessibility of products and environments in the RERC's designated priority research area. The RERC must contribute to this outcome by emphasizing the principles of universal design in its product research and development. For purposes of this section, the term "universal design" refers to the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

(5) Improved awareness and understanding of cutting-edge developments in technologies within its designated priority research area. The RERC must contribute to this outcome by identifying and communicating with relevant stakeholders, including NIDRR, individuals with disabilities, their representatives, disability organizations, service providers, professional journals, manufacturers, and other interested parties regarding trends and evolving product concepts related to its designated priority research area.

(6) Increased impact of research in the designated priority research area. The RERC must contribute to this outcome by providing technical assistance to relevant public and private organizations, individuals with disabilities, employers, and schools on policies,

guidelines, and standards related to its designated priority research area.

(7) Increased transfer of RERC-developed technologies to the marketplace. The RERC must contribute to this outcome by developing and implementing a plan for ensuring that all technologies developed by the RERC are made available to the public. The technology transfer plan must be developed in the first year of the project period in consultation with the NIDRR-funded Disability Rehabilitation Research Project, Center on Knowledge Translation for Technology Transfer.

In addition, under each priority, the RERC must--

- Have the capability to design, build, and test prototype devices and assist in the technology transfer and knowledge translation of successful solutions to relevant production and service delivery settings;
- Evaluate the efficacy and safety of its new products, instrumentation, or assistive devices;
- Provide as part of its proposal, and then implement, a plan that describes how it will include, as appropriate, individuals with disabilities or their representatives in all phases of its activities, including research, development, training, dissemination, and evaluation;

- Provide as part of its proposal, and then implement, in consultation with the NIDRR-funded National Center for the Dissemination of Disability Research, a plan to disseminate its research results to individuals with disabilities, their representatives, disability organizations, service providers, professional journals, manufacturers, and other interested parties;

- Conduct a state-of-the-science conference on its designated priority research area in the fourth year of the project period, and publish a comprehensive report on the final outcomes of the conference in the fifth year of the project period; and

- Coordinate research projects of mutual interest with relevant NIDRR-funded projects, as identified through consultation with the NIDRR project officer.

Types of Priorities:

When inviting applications for a competition using one or more priorities, we designate the type of each priority as absolute, competitive preference, or invitational through a notice in the Federal Register. The effect of each type of priority follows:

Absolute priority: Under an absolute priority, we consider only applications that meet the priority (34 CFR 75.105(c)(3)).

Competitive preference priority: Under a competitive preference priority, we give competitive preference to an application by (1) awarding additional points, depending on the extent to which the application meets the priority (34 CFR 75.105(c)(2)(i)); or (2) selecting an application that meets the priority over an application of comparable merit that does not meet the priority (34 CFR 75.105(c)(2)(ii)).

Invitational priority: Under an invitational priority, we are particularly interested in applications that meet the priority. However, we do not give an application that meets the priority a preference over other applications (34 CFR 75.105(c)(1)).

Final Priorities: We will announce the final priorities in a notice in the Federal Register. We will determine the final priorities after considering responses to this notice and other information available to the Department. This notice does not preclude us from proposing additional priorities, requirements, definitions, or selection criteria, subject to meeting applicable rulemaking requirements.

Note: This notice does not solicit applications. In any year in which we choose to use these priorities, we invite applications through a notice in the Federal Register.

Executive Orders 12866 and 13563:

Regulatory Impact Analysis

Under Executive Order 12866, the Secretary must determine whether this regulatory action is "significant" and, therefore, subject to the requirements of the Executive order and subject to review by the Office of Management and Budget (OMB). Section 3(f) of Executive Order 12866 defines a "significant regulatory action" as an action likely to result in a rule that may--

(1) Have an annual effect on the economy of \$100 million or more, or adversely affect a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or Tribal governments or communities in a material way (also referred to as an "economically significant" rule);

(2) Create serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impacts of entitlement grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles stated in the Executive order.

This proposed regulatory action is not a significant regulatory action subject to review by OMB under section 3(f) of Executive Order 12866.

We have also reviewed this regulatory action under Executive Order 13563, which supplements and explicitly reaffirms the principles, structures, and definitions governing regulatory review established in Executive Order 12866. To the extent permitted by law, Executive Order 13563 requires that an agency--

(1) Propose or adopt regulations only on a reasoned determination that their benefits justify their costs (recognizing that some benefits and costs are difficult to quantify);

(2) Tailor its regulations to impose the least burden on society, consistent with obtaining regulatory objectives and taking into account--among other things and to the extent practicable--the costs of cumulative regulations;

(3) In choosing among alternative regulatory approaches, select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity);

(4) To the extent feasible, specify performance objectives, rather than the behavior or manner of compliance a regulated entity must adopt; and

(5) Identify and assess available alternatives to direct regulation, including economic incentives--such as user fees or marketable permits--to encourage the desired behavior, or provide information that enables the public to make choices.

Executive Order 13563 also requires an agency "to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible." The Office of Information and Regulatory Affairs of OMB has emphasized that these techniques may include "identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes."

We are taking this regulatory action only on a reasoned determination that its benefits justify its costs. In choosing among alternative regulatory approaches, we selected those approaches that maximize net benefits. Based on the analysis that follows, the Department believes that this proposed priority is consistent with the principles in Executive Order 13563.

We also have determined that this regulatory action would not unduly interfere with State, local, and tribal governments in the exercise of their governmental functions.

In accordance with both Executive orders, the Department has assessed the potential costs and benefits of this regulatory action. The potential costs associated with this regulatory action are those resulting from statutory requirements and those we have determined as necessary for administering the Department's programs and activities.

The benefits of the Disability and Rehabilitation Research Projects and Centers Programs have been well established over the years in that similar projects have been completed successfully. These proposed priorities will generate new knowledge through research and development. Another benefit of these proposed priorities is that the establishment of new RERCs will improve the lives of individuals with disabilities. The new RERCs will generate, disseminate, and promote the use of new information that will improve the options for individuals with disabilities to fully participate in their communities.

Intergovernmental Review: This program is not subject to Executive Order 12372 and the regulations in 34 CFR part 79.

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Dated: April 5, 2012

Alexa Posny,
Assistant Secretary for
Special Education and
Rehabilitative Services.

[FR Doc. 2012-8614 Filed
04/09/2012 at 8:45 am; Publication
Date: 04/10/2012]